PROJECT FACT SHEET

CONTRACT TITLE: Wettability and Imbibition: Microscopic Distribution of Wetting and its Consequences at the Core and Field Scales/Mega PRDA Breakout

ID NUMBER: DE-AC26-99BC15204

B&R CODE: AC1005000

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PROJECT SITE
CITY: Socorro **STATE**: NM
CITY: **STATE**:
CITY: **STATE**:

CONTRACT PERFORMANCE PERIOD:
2/1/1999 to 1/31/2002

PROGRAM: Supporting Research
RESEARCH AREA:
PRODUCT LINE: ADIS

FUNDING (1000'S)	DOE	CONTRACTOR	TOTAL
PRIOR FISCAL YRS	0	0	0
FISCAL YR 1999	300	225	525
FUTURE FUNDS	1198	450	1648
TOTAL EST'D FUNDS	1498	675	2173

OBJECTIVE: The main objectives of this study are: (1) to quantify the microscopic distribution of altered wetting that occurs in oil reservoirs as crude oil components on rock surfaces. , and (2) to apply quantitative descriptions of wetting at the microscopic level to interpretation of imbibition in mixed-wet porous media.

PROJECT DESCRIPTION:

Background: Wettability of oil-bearing rocks and effect of wetting on imbition processes significantly impact the amount of oil that can be recovered from an oil reservoir and the rate at which that oil is produced. Once considered an intrinsic reservoir property, one now knows that wetting depends on adsorption of components from the oil, that patterns of mixed wetting can develop that depend on distributions of water and oil, and that wetting can change during the courses of recovery operations.

In this project the proposer will employ new techniques to study interactions between crude oil components, brine, and mineral surfaces. In rocks, the rate of imbibition will be used to quantify changes in wetting.

Work to be Performed: In this project the proposer will employ new techniques to study interactions between crude oil components, brine, and mineral surfaces. In rocks, the rate of imbibition will be used to quantify changes in wetting.

PROJECT STATUS:

Current Work: Oil selection, sample acquisition, and equipment design and purchase are underway. A prototype of the RI measuring device is in the design stage at Texas Tech. Imbibition testing of oil/air systems continues at the University of Wyoming.

Scheduled Milestones:

Accomplishments: The work has begun at all three institutes involved in this project. The University of Wyoming group has reported on a preliminary study of the rate which oil imbibes into air-filled core plugs. Air compression and trapping may account for deviation from scaling rules developed for strongly wetted oil/water systems. A procedure for recovering adequate amounts of SARA fractions for further analysis is being developed. A Langmuir trough with the capability to measure interfacial pressures has been selected and was recently received. A new method of measuring crude oil refractive index at controlled conditions of temperature and pressure is in the design phase at Texas Tech University.